alberta's species at risk program

Western Small-footed Bat

Conservation Management Plan

2012-2017

Alberta Species at Risk Conservation Management Plan No. 6

Government of Alberta

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Conservation Management Plan

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PREFACE

Albertans are fortunate to share their province with a diversity of wild species. A small number of these species are classified as *Species of Special Concern* because they have characteristics that make them particularly sensitive to human activities or natural events. Special conservation measures are necessary to ensure that these species do not become Endangered or Threatened.

Conservation management plans are developed for *Species of Special Concern* to provide guidance for land and resource management decisions that affect the species and their habitat. These plans are intended to be a resource tool for Environment and Sustainable Resource Development - Fish and Wildlife Division (SRD-FWD) and for provincial and regional land and resource management staff.

Conservation management plans provide background information including species biology, threats to species and habitat, and inventory/monitoring history. Plans also provide a goal, objectives, and actions (management recommendations). Management recommendations are typically categorised into inventory and monitoring needs; habitat management and conservation; education and communication; and additional management considerations as required.

Conservation management plans are generally prepared by an SRD-FWD biologist who has been designated as the provincial species lead. Writers from outside SRD-FWD are occasionally sought to prepare plans for species for which there is little in-house expertise. In order to ensure accuracy and utility, each plan is reviewed by a species expert and a designated provincial representative from SRD Forestry Division and/or Lands Division. In some cases there may be additional reviewers from staff, industry, and other agencies.

Conservation management plans are internal guidance documents. They are implemented under the guidance of the species lead and are "living" documents that can be revised at any time as required. Conservation management plans are more succinct than the recovery plans that are prepared for Endangered and Threatened species and do not involve participation of a multi-stakeholder team.

Conservation management plans are approved by the Director of Wildlife and/or Directory of Fisheries. Plans will be reviewed annually by the species lead and updated if necessary, and a more in-depth review will occur five years after a plan's approval.

EXECUTIVE SUMMARY

In Alberta, the western small-footed bat is restricted to the southeast where it lives in the badlands. It uses clay cutbanks along prairie rivers for roosting and hibernation sites, and forages around cottonwood trees. The western small-footed bat has been designated as a *Species of Special Concern* in Alberta because of these narrow habitat requirements.

The primary threats to this species are changes to habitat, in terms of large scale changes to flood regimes that would eliminate roost sites, and alteration and/or removal of cottonwood galleries. This plan recommends ways to conserve western small-footed bat populations and habitat, including: monitoring populations, creating Best Management Practices (BMPs) regarding land use around cottonwoods, and providing education to landowners, public and land managers about the importance of this species' habitat needs.

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TABLE OF CONTENTS

PREFACE iv
EXECUTIVE SUMMARY v
ACKNOWLEDGEMENTS v
TABLE OF CONTENTS vi
1.0 INTRODUCTION 1
1.1 Breeding Biology and Habitat Requirements 1
1.2 Threats to Population 2
1.3 Inventory and Monitoring 3
2.0 GOALS AND OBJECTIVES 3
2.1 Goal 3
2.2 Objectives 3
3.0 MANAGEMENT ACTIONS 3
3.1 Education and Communication 3
3.2 Monitoring and Assessment 4
3.3 Habitat Management 4
3.4 Additional Management 5
4.0 SUMMARY 5
5.0 LITERATURE CITED 5

TABLE OF FIGURES

Figure 1. Distribution of western small-footed bats in Alberta 2

1.0 INTRODUCTION

The western small-footed bat (*Myotis ciliolabrum*) has been approved as a *Species of Special Concern* in Alberta because it has a small range within the province, is found in a limited number of locations, and there is potential for its habitat to decline. The western small-footed bat is protected as a *Non-Game Animal* under the *Wildlife Act*.

The Endangered Species Conservation Committee's (ESCC) Initial Conservation Action Statement (2008) for the western small-footed bat indicates a need to:

1. Designate the western small-footed bat as a *Species of Special Concern*,
2. Develop and implement a conservation and management strategy, including monitoring (habitat associations and population size and distribution),
3. Actively conserve and manage important habitat (cottonwood trees), and
4. Secure funding and resources to support conservation actions.

1.1 Breeding Biology and Habitat Requirements

The western small-footed bat is strongly associated with arid and semi-arid areas, and in Alberta is restricted to the southeast where it uses the badlands and clay cutbanks along prairie rivers (Holloway and Barclay 2000). The highest concentrations of this species are along the Red Deer, South Saskatchewan and Milk rivers where suitable rocky roosting habitat is available (C. Lausen, unpubl. data). Specifically, this bat requires shallow crevices that are heated by the sun for maternity roosts, and deeper frost-free crevices for hibernation (Lausen and Barclay 2006). These specific habitat requirements limit its distribution. The western small-footed bat forages around cottonwood trees, and although this habitat association is not well understand, cottonwood stands appear to be an important habitat component (Holloway and Barclay 2000, ASRD&ACA 2008).

Distinct subpopulations of this species, with restricted gene flow, exist within and between river basins in Alberta, making subpopulations vulnerable to local extirpation. Moreover, bats are typically long-lived and have a low reproductive rate (usually only one offspring per year), making it difficult for populations to recover from declines (ASRD&ACA 2008).

Figure 1. Distribution of western small-footed bats in Alberta.

1.2 Threats to Population

Habitat loss and alteration is the primary threat to western small-footed bat populations in Alberta. The most important habitat components are rock-roosting habitat and cottonwood galleries.

1.2.1 Habitat Loss and Alteration

Alteration and loss of rock-roosting habitat would have serious consequences for the survival of this species. However, the ways in which this habitat can be altered are limited, with dam construction and operation being the most likely. Dams have the potential to alter or destroy rock-roosting habitat through flooding, and additionally, flooding would isolate populations.

Upstream dam construction would also lead to fewer natural flooding events, which would reduce recruitment of cottonwood habitat, an important habitat component for the western small-footed bat. Conversion of flat areas of river valleys to irrigated cropland reduces or removes riparian woodlands, and to a lesser extent, overuse by cattle also alters these woodlands. Loss of cottonwood habitat appears to be the biggest and most likely threat to the western small-footed bat at this time (ASRD&ACA 2008).

1.2.2 Disease

White-nose syndrome, a fungal disease responsible for killing between 5.7 and 6.7 million bats in eastern North America, is spreading west (U.S. Fish and Wildlife Service). At this time, it is not known if the western small-footed bat is susceptible to this fungus. Given that the fungus is transferred by contact between bats in hibernacula, the small-footed bat may be less vulnerable because it does not hibernate in large aggregations. However, the potential catastrophic effects of the disease warrant increased monitoring of all bat species and protection of bat habitat.

1.3 Inventory and Monitoring

A number of bat surveys have been conducted in southeastern Alberta since 1987; a complete history can be found in ASRD&ACA (2008). Most surveys in which the western small-footed bat was the target species occurred between 2002 and 2006. The majority of bat records come from graduate students' research.

2.0 GOALS AND OBJECTIVES

2.1 Goal

Maintain current distribution and breeding populations of western small-footed bats in Alberta.

2.2 Objectives

1. Education and communication: Improve education and communication about the importance of bats and their habitats, with government, industry, public, and landowners.

2. Inventory, monitoring and assessment: Periodic surveys of known subpopulations should be conducted to determine if the species appears to be declining. Further inventories should be conducted in suitable habitat as resources permit.

3. Habitat protection and research: Protect prairie riparian woodlands and conduct research to investigate the foraging behaviour of western small-footed bats in these woodlands.

3.0 MANAGEMENT ACTIONS

3.1 Education and Communication

There is considerable misunderstanding about bats, and it is essential to convey the important ecological role of bats to the public and landowners while dispelling myths that promote negative attitudes. This message needs to be part of all communication about the western small-footed bat. In addition, the importance of prairie riparian woodlands, especially cottonwood galleries, as key habitat for western small-footed bats (and other wildlife species) needs to be communicated to landowners and the public. As previously mentioned, working with existing programs that have already developed working relationships with landowners will help to facilitate outreach.

3.2 Monitoring and Assessment

Known subpopulations should be monitored every three to five years using a combination of acoustic and capture techniques. Repeatable inventory methods including mistnet configurations, sizes and deployment details, and weather and moon conditions at each location will be needed to make trend conclusions. Reproductive status needs to be documented for each bat including the amount of toothwear so that relative ages within the population can be tracked. These are long-lived animals, so adults may remain in the population without reproducing if conditions change that reduce reproductive success but enable survival. When monitoring, sampling should be conducted at least twice during the summer season to coincide with late pregnancy / early lactation and fledging of young of year.

In addition to summer monitoring of subpopulations, inventory in known overwintering areas such as Dinosaur Provincial Park should be undertaken every three years in fall during the mating period such that male: female ratios can be monitored and the degree of male reproduction assessed. Late winter or early spring monitoring should also be conducted. Pre- and post-winter body conditions can be monitored this way. This will become increasingly important if and when white-nose syndrome spreads to western Canada (at this time it is not known whether *M. ciliolabrum* is susceptible to the fungus). Further inventories should be conducted in suitable habitat as resources permit. The Alberta Bat Survey Protocol should be followed (ASRD 2006) and all bat detection and capture data should be stored in FWMIS.

Echolocation calls of *M. ciliolabrum* resemble other prairie *Myotis* (e.g., *M. lucifugus, M. volans*). As such, statistical methods may be necessary to analyze acoustics inventory data. Reference recordings of *M. ciliolabrum* will be required for these analyses; therefore efforts should be made to obtain representative (free-flying) recordings during all mistnet inventories. Refer to the Handbook of Inventory Methods and Standard Protocols for Surveying Bats in Alberta (ASRD 2006).

3.3 Habitat Management

Maintaining cottonwood habitat in riparian areas is essential. ASRD, in consultation with a variety of organizations, such as Cows and Fish, should develop Beneficial Management Practices (BMPs) for prairie riparian woodlands, with consideration of other species that use cottonwood riparian habitat. BMPs will help to maintain habitat by defining appropriate use, including restrictions on conversion to cropland and recommending stocking rates and timing of cattle use. These BMPs should be incorporated into local landholder's farming and ranching operations and can be communicated through conservation organizations already operating in relevant areas (e.g., MULTISAR).

The risk of habitat loss due to changes in flood regimes needs to be addressed through a collaborative approach between all responsible governments and agencies (i.e.,

Government of Alberta, Government of Canada and relevant agencies in the USA). Education on the negative impacts of unnatural flooding events, such as loss of cottonwood forests, changes in species composition, and impacts on biodiversity, is required. Policy to address or mitigate these impacts is also required.

Some management practices are already in existence that help to reduce human disturbance and habitat alteration, including: a Protective Area Notation (PNT) for the Milk River Basin that prevents surface disturbance within a quarter section of the river, and no upstream oil and gas activity within the river valley.

3.4 Additional Management

The importance of bat habitat, particularly roosting and hibernating habitat, needs to be considered in any future dam proposals.

4.0 SUMMARY

The western small-footed bat has a narrow range in Alberta with specific habitat requirements: cliffs for roosting and hibernation, and riparian woodlands for foraging. Maintaining these key habitat components is necessary for their conservation. This plan will be reviewed and updated in five years.

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